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9/18/04  
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Will -

We went on this issue back and forth and somehow this final response to you was buried with other stuff and was not sent to you during my absence. Sorry about it. I am hopeful we can move forward on this issue and have the Phase II of the transformer investigation behind us. Please let me know if you have questions.

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1. TPH issue: EPA agrees with Boeing's rationale regarding "bounding" TPH extent. We agree that the SCL Transformer Investigation should focus on the extent of PCB contamination in soil and groundwater. If PCB is bounded in the additional four sampling locations but TPH still exceeds the risk-based screening level, the TPH extent must be addressed as part of the 2-66 area data gap investigation.

2. PCB groundwater sampling: EPA believes that soil sampling only cannot fully address GROUNDWATER pathway concern, that is, to delineate the extent of PCB groundwater contamination. Soil sampling results will be used for evaluation of the groundwater pathway, however they are indirect line of evidence. Groundwater samples will be the direct measurements of PCB contamination in the shallow aquifer. EPA believes that additional monitoring wells with screens intercepting water table may be needed to fill in spatial gaps between PL2-016A and PL2-034A/003A. EPA agrees that this issue can be addressed through 2-66 Area Data Gap Work Plan.

EPA understands your concern regarding potentially high turbidity of Geoprobe samples and the impact of DDC IM operation on the wells inside of the sheetpile wall. Turbid samples may bias high for PCB analysis. EPA agrees that water samples taken from appropriately constructed monitoring well would be ideal. Therefore, EPA directs Boeing to take one groundwater sample at the soil boring location outside of the sheetpile wall and measure the groundwater sample turbidity in the field. If the sample turbidity is high (greater than 5NTU), groundwater analysis may not be conducted. If the sample turbidity is less than 5 NTU, groundwater sample collected at this location must be analyzed for PCBs and TPHs. However, if the groundwater sample is not analyzed because of high turbidity and the total PCBs in co-located soil samples are greater than 1 mg/kg, an additional monitoring well must be installed and appropriately screened at the water table for groundwater sampling of PCBs and TPHs.

3. Sequencing sample analysis: EPA disagrees with your rationale to sequence soil sample analysis. We simply do not see the benefit of sequencing total 12 soil samples for this additional investigation. Boeing must collect and analyze all 12 soil samples at the four locations during the Phase 2 SCL Transformer PCB Investigation.

As agreed during the meeting on September 2, 2004, Boeing will submit to EPA the revised Phase II Transformer PCB Investigation Work Plan 20 days after resolution of the above soil/groundwater sampling issues.

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SCLT Phase 2: Proposed

samplingLocations

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Subject: RE: Boeing Plant 2

downgradient gw

Anna -

At our September 2 meeting on the Phase 2 scope for the SCL Transformer Investigation, Boeing believes that we heard and understood Agency concerns, but unfortunately your email from Sept 14 on remaining points raises too many new open questions that must be addressed before we can go on. The following frames these points, and proposes steps that we believe will fully address Agency needs and Investigation objectives:

1. Regarding TPH issues: Boeing will analyze collected soil and groundwater samples for TPH, but will not attempt to "bound" TPH extent as part of the SCL Transformer Investigation. The proposed sample locations near and within the Building 2-66 Sheetpile are very near a historical plume of floating diesel fuel, which was the focus of a multi-year Interim Measure; also, additional groundwater monitoring is planned in the area as part of the 2-66 Area work, and TPH plume delineation and remedy selection is already part of the on-going work in 2-66 Area of CMS planning. Any additions to the RCRA data base for this area from the SCL Transformer release will be used and managed as part of 2-66 Area TPH objectives. Given the complex nature of TPH in the area and other work already being done, we feel strongly that we should not morph the Transformer scope and complicate 2-66 Area work, but stick with the PCB (with associated TPH) focus established in Phase 1. We propose referencing this other TPH data and work in the Phase 2 Work Plan to ensure the reader knows of this other work.

2. Regarding PCB issues: The concern that we believe we heard voiced



at the meeting and in your comments was a GROUNDWATER pathway concern. Specifically, that there are not enough samples in the 8 to 12 feet bgs level (where the highest potential for groundwater transport would occur) at optimum locations down gradient of the transformer release to definitively say that the PCBs in the fill at the SW Bank or in the Waterway did or did not arrive via groundwater from the transformer release.

The solution, we understood, is to measure additional groundwater concentrations between the transformer release and the SW Bank. There is, however, a large sheetpile containment structure in between that contains a very active groundwater recirculation system that essentially controls the shallow groundwater within the sheetpile (in order to remove the chlorinated solvents). Due to this ongoing circulation, it is not clear (still to us) what groundwater PCB concentrations within this structure would represent. Therefore, and since this point came up before, our Phase 2 Work Plan incorporated Tong's earlier suggestion to sample existing well PL2-016A (just inside the sheetpile wall) and wells PL2-034A/003A (down gradient of the entire sheetpile) for this purpose.

Since that apparently did not fully address Agency needs, the next best thing that was to measure SOIL concentrations in the zone where possible groundwater PCB transport would have occurred historically to see if there are residual PCB concentrations present; i.e., a pattern of soil PCBs might present a record of historical PCB flows in groundwater. The four proposed borings, therefore, are primarily intended to answer whether PCBs in that area demonstrate that a PCB release from the transformer historically moved via groundwater toward or to the Duwamish Waterway. To be more complete, we will also add historical PCB data (non-detects at 1 ppm) from within the sheetpile to all maps for completeness and clarity.

This approach makes sense to us. We also have to say we don't really understand how groundwater measurements from within the sheetpile will be used given that the sheetpile interim measure has extensive modified groundwater movement through the recirculation of groundwater. To be very clear up front, we'd like to resolve with the Agencies what groundwater results from that area will mean before any such samples are collected. We thought the soil sampling was enough, and the newer idea of those groundwater samples surprised us.

If EPA remains convinced that we are to collect additional groundwater measurements from within the sheetpile, then let's at least use existing wells and not geoprobe-collected groundwater. Well data are almost always of higher quality than Geoprobe data, they avoid turbidity problems that can influence PCB concentrations, they are reproducible, and they fall within the existing QAPP (which the Geoprobe method of sampling groundwater does not). They will also be just as fast to collect. However, we still think the existing proposal (Tong's original) and associated well locations are optimal and sufficient for answering Agency questions.

3. Finally, because of the complexities encountered when following a possible PCB plume from the SCL transformers into an area of known contamination in the 2-66 Area (where there are three known contaminants: diesel, TCE, and metals), we think all data arising from Transformer Phase 2 work are best added to data already being managed

through the 2-66 Area CMS process. We will be doing this anyways. Let's get the Phase 2 data, report it in the Phase 2 Transformer Report, and answer the PCB pathway questions. At that point, we will also have additional information from throughout the 2-66 Area. We can then make decisions with all the information in hand about how to proceed in this complex wider area. We have a good process for dealing with these complex issues, and we'd prefer to use it - and not stretch the scope of the Transformer Investigation as well.

In Summary, we are proposing the following:

- . Collect additional soil samples in the sheetpile as requested at one time, and sequence the analysis. This is consistent with the overall pathway logic of the Transformer Investigation starting with Phase 1, and sequencing will occur as other field activities are happening and so will not add to the schedule. We simply do not understand or agree with urgency as a reason to analyze all sheetpile-area soil samples at the same time.
- . Collect the groundwater samples as was originally proposed by EPA (up and down gradient of the sheetpile) as is included in the Phase 2 Work Plan, but not collect other, already compromised, groundwater samples in the sheetpile.
- . Do not add the language regarding next steps relative to the Transformer Investigation that was proposed in your email, but to assess the full complement of data as part of the overall groundwater picture in the 2-66 Area using our existing RCRA CMS process.

We hope for a quick response and resolution to this last Phase 2 question. Thanks.

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-----Original Message-----

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Subject: Re: Boeing Plant 2 SCLT Phase 2: Proposed downgradient gw  
samplingLocations

Will -

I received your proposal with respect to the sheet pile sampling locations. NOAA and EPA reviewed your proposal and we concluded the following:



1. We concur with the all four proposed locations.
2. We concur with the proposed depth intervals [8-10, 10-12 and 12-14 feet below ground surface (bgs)].
3. List of analytes is acceptable (PCB and TPH).

However, we disagree with proposed tiered approach. EPA requires Boeing to collect and analyze samples at all four locations at the three proposed depth intervals instead of the proposed tiered approach. The two sample locations from your proposal (only one of the two is within the sheet pile wall) are inadequate for spatial coverage. Four sampling locations with total 12 samples are not excessive and do not warrant the delay that could result from a tiered approach. In addition, groundwater samples shall also be collected at the water table using Geoprobe rig, with the same analytes (PCB and TPH).

EPA also requires Boeing to discuss further actions based on the sampling results from the four locations. EPA believes that the farthest sampling location from the transformer pad (westernmost location) must serve as a bounding point. That is, PCB and TPH if detected in the three intervals must be below their respective screening levels. Three scenarios may occur as follows:

(1) If the PCB and TPH contamination is not bounded by any of the four sampling points (that is, PCBs and TPHs are detected above screening criteria at all four locations), then additional soil and groundwater sampling locations toward the Waterway must be considered for the transformer PCB investigation.

(2) If the PCB and TPH contamination is not bounded by the farthest location but is bounded by the other three locations, then a separate source may exist and further investigation will be required but it will not be included in the Transformer PCB investigations.

(3) If the PCB and TPH contamination is bounded by the westernmost location and optimally by the other two locations within the sheet pile, then no further investigation will be needed as part of the transformer PCB investigation.

As agreed during the meeting on September 2, 2004, Boeing will submit to EPA the revised Phase II Transformer PCB Investigation Work Plan 20 days after resolution of the issue related to the downgradient soil/groundwater sampling locations.

Please let me know if you wish to discuss this any further.

Anna Filutowski

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SCLT Phase 2: Proposed

Locations

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Subject: Boeing Plant 2

downgradient gw sampling

Anna/Hideo -

This follows up on NOAA's comment on further bounding of PCB contamination in groundwater in a down gradient direction from the SCL Transformer location.

Attached is a graphic depicting locations for geoprobes in the down gradient direction from the SCL Transformer that we propose be located as part of Phase 2 work. As I communicated yesterday, new samples are needed given ARI's unexpected disposal of 2-66 sheetpile IM samples archived from roughly those same locations that we first intended to use for this Transformer Phase 2 purpose.

This graphic also shows our intended sequencing of sample analyses of the four sets of geoprobe samples, similar to sequencing done for other sets of Transformer samples.

If this approach is agreeable to the Agencies, we will incorporate this into the Phase 2 WP redraft.

Let us know. Thanks.

Will Ernst  
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<<Proposed Sheet pile sampling locations.doc>>

(See attached file: Proposed Sheet pile sampling locations.doc)